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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/825,363  | 04/16/2004  | Ha Sang Lee          | 8733.1030.00-US             | 8107             |
| 30827 7590 04/11/2007<br>MCKENNA LONG & ALDRIDGE LLP<br>1900 K STREET, NW<br>WASHINGTON, DC 20006 |             |                      | EXAMINER<br>TSEGAYE, DANIEL |                  |
|   |             |                      | ART UNIT                    | PAPER NUMBER     |
|   |             |                      | 2609                        |                  |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 04/11/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/825,363

Applicant(s)

LEE ET AL.

Examiner

DANIEL TSEGAYE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Apr. 16 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Apr. 16 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

3. Claims 26-30 are objected to because of the following informalities:  
Claim 26, the spelling "converter converters" should be changed "converter converting".

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 11-14, 20,21 and 24 are rejected under 35 U.S.C. 102(b) by Naito (U.S Pat # 6,462,735).

As to claim 24, Naito discloses a method of driving a flat panel display device having a pixel, comprising:

a data converter (210) inputted with a N-bit (e.g., 8 bit) digital data signal for  
Converting the N-bit digital data signal into a M-bit (e.g., 9 bit or 10 bit)

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digital data signal, wherein each of N and M is an integer and M (e.g., 9 or 10) is greater than N (e.g., 8) (see col.10, lines 15-22); and

a data driving circuit (200, 300 and 430) inputted with the M-bit (e.g., 10 bit) digital data signal for generating an analog video signal (i.e. D/A converter) and applying the analog video signal (e.g., picture signal) to the pixel (see col.13, line 60 through col. 14, line15).

As to claim 21, this claim differs from claim 24 only in that claim 21 is a method claim.

As to claim 11, this claim differs from claim 21 only in the limitation “ Red, Green and Blue M-bit digital data signal correspond a gray scale numbers ” is additionally recited. Naito teaches Red, Green and Blue (e.g., picture signal) M-bit digital data signal correspond a gray scale numbers (see col. 11, line 33 through col.12, lines 50-65).

As to claim 12, Naito teaches wherein the gray scale numbers of the Red, Green and Blue M-bit digital data signals are different from each other (see Fig. 4).

As to claim 13, Naito teaches wherein the gray scale number of the Red M-bit digital data signal is greater than the gray scale numbers of the Green and Blue digital data signals (Fig. 4 for example, red curve has the highest gradation numbers about 260).

As to claim 14, Naito teaches wherein the gray scale number of the Green M-bit digital data signal is greater than the gray scale number of the Blue digital data signal (Fig. 4, shows green curve has the second highest gradation number after red).

As to claim 20, Naito teaches wherein each of the pixels (410) is a liquid crystal display cell (see col.7, lines 63-67).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-9,15-18,22-23,25-28,30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naito in view of Kang (U.S Pub # 2002/0063666).

As to claims 1, note the discussion of Naito above, this claim differs from claim 11 in that the limitation "a look-up table", "a gamma voltage generator generating a plurality of gamma voltages corresponding to the gray scale numbers" are additionally recited. Naito does not mention these limitations. Kang teaches a data converter (210) having a look-up table (167), a gamma voltage generator (164) generating a plurality of gamma voltages corresponding to the gray scale numbers (see [0077-0079]).

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to have added a data converter having a look-up table, a gamma voltage generator generating a plurality of gamma voltages corresponding to the gray scale numbers as taught by Kang to display device of Naito to improve a display quality of an image input from various input output device to provide a better picture quality (see [0089]).

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As to claims 2 and 28, Kang teaches a timing controller (162) outputting the Red, Green and Blue N-bit digital data signals to the data converter (167)(see [0076 and 0079]).

As to claim 3, Kang teaches wherein the data driving circuit (e.g., 83, 84) includes the gamma voltage generator.

As to claim 4, Naito teaches wherein the gray scale numbers of the Red, Green and Blue M-bit digital data signals are different from each other (see Fig. 4).

As to claim 5, Naito teaches wherein the gray scale number of the Red M-bit digital data signal is greater than the gray scale numbers of the Green and Blue digital data signals (see Fig. 4).

As to claim 6, Naito teaches wherein the gray scale number of the Green M-bit digital data signal is greater than the gray scale number of the Blue digital data signal (see Fig. 4).

As to claims 7 and 16, Naito teaches wherein the Red analog data signal applied to the respective pixel has a voltage level ranged in about 0V to about 5V(Fig. 3 and see col. 10, lines 50-52).

As to claims 8 and 17, Naito teaches wherein the Green analog video signal applied to the respective pixel has a voltage level ranged in about 0V to about 2.5V(see Fig. 3 and col. 10, lines 50-52).

As to claims 9 and 18, Naito teaches wherein the Blue analog video signal applied to the respective pixel has a voltage level ranged in about 0V to about 1.9V(see Fig. 3 and col. 10, lines 50-52).

As to claim 15, Kang teaches the step of converting the Red, Green and Blue M-bit digital data signals into Red, Green and Blue analog video signals further includes: generating a plurality of different gamma voltages corresponding to the gray scale numbers using a gamma voltage generator (see [0013]).

As to claims 22, Kang teaches converting digital data signal further includes referring to a look-up table (167, of Kang).

As to claim 23, Kang teaches generating a gamma voltage using a gamma voltage generator (164) (see [0013]).

As to claim 25, Kang teaches wherein the data converter further includes a look-up table (167)(see Fig. 16).

As to claim 26, Kang teaches the data converter converting digital data signal (e.g., 6 bit) using the look-up table (167), wherein the digital data signal corresponds to a gray scale number.

As to claim 27, Kang teaches a gamma voltage generator (4) for generating a gamma voltage corresponding to the gray scale number and outputting the gamma voltage (see [0013]) to the data driving circuit (see [0005]).

As to claim 30, Naito teaches wherein each of the pixels (410) is a liquid crystal display cell (see col.7, lines 63-67).

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naito in view of Hasegawa (U.S Pub # 2001/0028335).

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As to claim 19, note the discussion of Naito above. Naito does not teach electroluminescence. Hasegawa teaches the pixel being both a liquid crystal cell and an electroluminescence cell (see [0055]).

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to have added electroluminescence cell as taught by Hasegawa to the liquid crystal display device of Naito to prevent the deterioration of moving image, and to give high luminance (see [0025]).

9. Claims 10 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naito in view of Kang as applied to claims 1 and 24-27, and further in view of Hasegawa.

As to claims 10 and 29, note the discussion of Naito and Kang above. Both do not teach an electroluminescence cell. Hasegawa teaches the pixel being both a liquid crystal cell and an electroluminescence cell (see [0055]).

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to have electroluminescence cell as taught by Hasegawa to the liquid crystal display device of Naito as modified by Kang to prevent the deterioration of moving image, and to give high luminance (see [0025]).

### **Conclusion**

10. The prior art made or record and not relied upon is considered pertinent to applicant's disclosure.



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Ha et al. (U.S pat #7,030,842) and Liaw (U.S Pub #2002/0158882) are cited to teach about gamma voltage generator and from digital to analog converter.

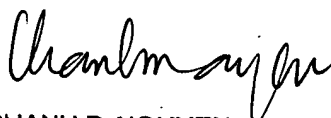
### **Inquiries**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL TSEGAYE whose telephone number is 571 270-1715. The examiner can normally be reached on Monday-Friday, 8:005:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHANH NGUYEN can be reached on 571 272 7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

D Tsegaye  
03/26/2007

  
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SUPERVISORY PATENT EXAMINER